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Positioning of a wireless relay node for useful cooperative communication (Article)

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Abstract

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Given the exorbitant amount of data transmitted and the increasing demand for data connectivity in the 21st century, it has become imperative to search for pro-active and sustainable solutions to the effectively alleviate the overwhelming burden imposed on wireless networks. In this study a Decode and Forward cooperative relay channel is analyzed, with the employment of Maximal Ratio Combining at the destination node as the method of offering diversity combining. The system framework used is based on a three- node relay channel with a source node , relay node and a destination node . A model for the wireless communications channel is formulated in order for simulation to be carried out to investigate the impact on performance of relaying on a node placed at the edge of cell. Firstly, an AWGN channel is used before the effect of Rayleigh fading is taken into consideration. Result shows that performance of cooperative relaying performance is always superior or similar to conventional relaying. Additionally, relaying is beneficial when the relay is placed closer to the receiver.

Author keywords

AWGN | Cooperative relay | Decode and forward | Rayleigh fading

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